

EXHIBIT 14



Prescription opioid use, misuse, and diversion among street drug users in New York City

W. Rees Davis*, Bruce D. Johnson

National Development and Research Institutes, Inc., 71 West 23rd Street, 14th Floor, New York, NY 10010, United States

Received 7 February 2006; received in revised form 25 July 2007; accepted 15 August 2007

Available online 3 October 2007

Abstract

Objective: The use of heroin, cocaine, and other drugs is well researched in New York City, but prescription opioids (POs) have been overlooked. This study documents patterns of PO use, misuse, and diversion among street drug users, and begins to indicate how drug culture practices interact with the legitimate therapeutic goals of PO prescriptions (e.g. pain management).

Methods: Staff completed interviews inquiring about the reasons for use of POs and illicit drugs with 586 street drug users. Ethnographers wrote extensive field notes about subjects' complex patterns of PO use.

Results: Methadone was used (71.9%) and sold (64.7%) at a higher level than OxyContin, Vicodin, and Percocet, used by between 34% and 38% of the users and sold by between 28% and 41% of the sellers. Recent PO use is associated with the recency of using heroin and cocaine ($p < .001$). Half of the heroin/cocaine sellers sold POs, and one quarter of the PO sellers only sold POs. Subjects were classified into four groups by whether they diverted POs or used POs to relieve pain or withdrawal rather than for euphoria. This classification was associated with frequency of PO use, whether POs were obtained from doctors/pharmacies or from drug dealers and family members, and those mostly likely to use POs for pain and withdrawal.

Conclusions: POs are an important component of street drug users' drug-taking regimes, especially those who are Physically Ill Chemical Abusers (PICA). Future research is needed to model PO use, misuse, and diversion among this population.

© 2007 Elsevier Ireland Ltd. All rights reserved.

Keywords: Prescription opioids; Drug selling/distribution; Substance abuse; Prescription drugs; Heroin; OxyContin; Vicodin

1. Introduction

1.1. Purpose

This study focuses on the patterns of use, misuse, and diversion of prescription opioids (POs) among street drug users. Data were collected via brief survey interviews on the various motivations or aims for PO use (e.g., pain relief, withdrawal avoidance, euphoria), their routes of ingestion (e.g., oral as prescribed/indicated, sniff/snort, injection), sources of supply (e.g., street dealers, physicians/pharmacists, family members), and resale purposes (e.g., use by someone else, use as a heroin additive) associated with POs. The study also investigates factors that impact government regulatory policies to prevent misuse and diversion of POs among street drug users.

1.2. Background

New York City (NYC) has historically had the largest number of heroin users in the U.S. (Courtwright, 2001, 2002). The use of cocaine and other street drugs is also widespread in NYC (Johnson et al., 2006). These populations have been the primary foci of drug abuse research for decades. Although some studies have occasionally documented the use and misuse of POs among urban street users (e.g., Spunt et al., 1986) and in treatment settings (Rosenblum et al., 2007), PO use was generally neglected relative to heroin and cocaine use. Research conducted in Europe (Fountain et al., 2000) has emphasized the increasing need for a much clearer scientific understanding of PO use, misuse, and diversion among street drug users. In numerous studies (more than a dozen cited in Manchikanti, 2006) estimates of drug abuse prevalence among chronic pain patients has ranged from 18% to 41% (Manchikanti, 2006), and a Substance Abuse and Mental Health Services Administration (SAMHSA) study (2005a) indicated that nearly three-fourths (73.8%) of new initiates to pain reliever use previously had used other illegal drugs.

* Corresponding author. Tel.: +1 845 679 4678; fax: +1 917 438 0894.
E-mail address: rees@hvc.rr.com (W.R. Davis).

The costs of prescription drug misuse and diversion in the United States has been estimated at \$181 billion for the year of 2002 alone, including direct costs such as emergency room visits, and indirect costs such as law enforcement expenses, drug and other crimes, and loss or impairment of work (Manchikanti, 2006). Costs are high in part because 56% more Americans abuse prescription drugs than the combined pool of those abusing any cocaine, heroin, hallucinogens or inhalants (Manchikanti, 2006). The rapidly increasing use of prescription pain relievers is associated with increases in the number of POs and their potency (e.g., OxyContin and Vicodin) that has occurred in the past decade (Kraman, 2004, Compton and Volkow, 2006). The scientific literature has identified several specific subpopulations involved in PO misuse and diversion that are so diverse that it is not feasible to study all of them in a single investigation—e.g., high school students (Partnership for Drug-Free America, 2005), college students (McCabe et al., 2005), older persons (SAMHSA, 2005b) and women (Manchikanti, 2006), most of whom initially obtain POs via legitimate medical practices. Among subpopulations of PO users, street drug users are among those most neglected in studies of PO misuse and diversion in the U.S. (New York State Office of Alcoholism and Substance Abuse Services (OASAS, 1999); Community Epidemiology Working Group (CEWG, 2005)).

1.3. Medical pharmacological treatment and drug subcultures

The theoretical framework for this study holds that conflicting motivations for PO use occur between medical treatment via pharmacotherapy versus street drug using subcultures, mixing legitimate medical use with diversion and misuse of POs for non-medical purposes. American medical practice has long accepted the valuable role of morphine and a variety of POs in the treatment of acute and chronic pain. All of these POs have addictive properties, such that the government attempts to severely limit their prescription to patients with physical pain problems (Kraman, 2004). The pharmaceutical industry has created over 20 POs that have been FDA approved and marketed, primarily for pain management. Pain management advocacy groups perceive that pain is insufficiently treated in the United States and that the guidelines for the treatment of pain are in need of clarification and standardization (Manchikanti, 2006). Methadone and recently buprenorphine have been marketed for maintaining heroin addicts—although both are sometimes used for pain management. Many of these POs are Schedule II or III Controlled Substances, making offenders liable to receive severe prison sentences if convicted of illegal possession and/or sale (resale). Many physicians may provide these POs to patients for pain relief, and less often as addiction therapy (Gerhardt, 2004; Michna et al., 2004).

To the extent possible, the Drug Enforcement Administration (DEA), federal and state agencies attempt to restrict these POs from misuse and abuse, especially by heroin users (Simoni-Wastila and Strickler, 2004). Because most of these POs have high potential for addiction, only DEA-licensed physicians can prescribe them, mainly for pain management purposes. Further,

physicians and pharmacists can be arrested and imprisoned for over-generous prescribing and not controlling (or not cutting off) patients who systematically divert or sell their prescriptions (Longo et al., 2000). However, the federal prohibition of heroin and other street drugs, the expansion of the underground market for these drugs and POs, and the institutionalization of heroin use and injection subcultures means a large number of persons with severe addiction problems (mainly with heroin, but complicated by cross addictions with other drugs) are present in American society. Many street drug users are aware that POs may be equivalent to or better than heroin, and may be eager applicants to obtain POs.

Often street drug users in NYC have chronic, painful physical ailments that necessitate legitimate prescriptions of powerful opioids. Those who are aging are especially likely to have a wide range of disorders involving pain (e.g., wounds from fights and accidents, diabetes, cancer, intestinal disorders, HIV/AIDS, arthritis, etc.) that may require a PO prescription (Van Ness et al., 2004). Passik and Kirsh (2004) report that it is sometimes difficult for patients, as well as for physicians, to discern the proper therapeutic regimen with pain medications, particularly when the patient also has mental health difficulties. Mental health problems that involve symptoms of anxiety are often difficult to discern from anxiety induced by withdrawal or under-medicated pain. Pain patients may experience pseudoaddiction, medication abuse that appears to be driven by addiction but is actually driven by unrelieved pain (Longo et al., 2000). Passik and Kirsh (2004) note that aggressive patient complaints about the need for higher doses may simply be a sign that the patient is under-medicated. However, as Longo et al. (2000) counter, physicians who say “no” and then change their decision to “yes” in response to patient demands or sympathetic appeals for more POs are just “reinforcing the scam” if those patients are gaming for surplus POs. The subjectivity of pain makes it very difficult to evaluate how much medication is needed (Gerhardt, 2004; Michna et al., 2004).

Street drug users have a variety of rights to seek medical care, receive Medicaid coverage if poor, and are often referred to treatment by the criminal justice and other institutions. While many street drug users may receive POs and use them as medically directed, there are likely subgroups that do not follow all the physician directives. A relatively vigorous medication/pill-trading/resale market exists in NYC and other cities among heroin users (CEWG, 2005).

1.4. Outcome objectives

Positive outcomes in the relationship between the medical treatment culture and the street drug subculture would be: (a) a reduction in PO diversion, (b) more street drug dependent persons seeking treatment via the medical system for their addiction symptoms as opposed to self-medicating via black market POs, (c) ease of access to POs for patients in need of pain therapy, and (d) reduction of pressure on physicians to always make the right decisions and other changes that might increase physician willingness to treat opioid-dependent patients.

2. Methods

2.1. Sample

The current research results from a small subcontract to conduct a post-marketing study of buprenorphine (brand names Subutex and Suboxone) that the FDA requires of the manufacturer, Rickett-Benckiser. National Development and Research Institute, Inc. (NDRI) ethnographic staff associated with other ongoing NIDA-funded projects used street outreach and recruitment at locales frequented by heroin/methadone users. A sample of 586 has been acquired over a nearly 3-year period (2004–2006).

2.2. Brief interview

The interview protocol was formulated to systematically inquire about patterns of PO medical use and misuse, diversion, use of illicit drugs, sources of income support, health insurance, physical pain symptoms, methadone program participation, and related medical conditions. The study targeted the use, misuse, and diversion of the following POs: Codeine, Darvon, Demerol, Dilaudid, Dolophine, Fentanyl, Methadone, Methadose, Morphine, OxyContin, Pallodone, Percocet, Percodan, Suboxone, Subutex and Vicodin. For each of these POs respondents were asked to clarify the various motivations or aims for use (e.g., pain relief, withdrawal avoidance, euphoria, other), their routes of ingestion (e.g., oral as prescribed/indicated, sniff/snort, injection, other), sources of supply (e.g. street dealers, physicians/pharmacists, family members, other), and resale purposes (e.g., use by someone else, use as a heroin adulterant, other).

2.3. Recruitment

Project ethnographers approached street drug users in public settings, obtained their informed consent, and completed the brief interview. This street-recruitment strategy likely under-sampled street drug users among working persons and methadone clients who comply with medication schedules. It likely oversampled persons who were unemployed, homeless, engaged in illegal hustles, and spent most of their time in public settings. Those recruited are very likely to participate actively (as consumers or sellers) in street markets for heroin, medication diversion, and PO or other pill transfers.

The interview took about 15 min to administer and subjects were given \$10 for their cooperation. A majority of subjects provided much more information about their PO use/misuse than could be recorded on the interview form; they were eager to talk further about it. The ethnographic staff also wrote extensive field notes summarizing subjects' experience with PO use and misuse, and especially about their reports of misuse and diversion activities. Selected quotes from some of these field notes are cited to illustrate types of PO users and diverters.

3. Results

3.1. Demographics

The sample of 586 was 54.6% male and 45.4% female, and age ranged from 21 to 71 with a mean age of 42. Most of the sample was of color (52.8% African-American; 27.4% Latino; 18.3% White; 1.5% Other). Gender was not statistically related to PO use in the past 30 days. Whites (71.2%) had higher levels of past-30-days PO use than either Latinos (62%) or Blacks (54.6%; $p < .05$). Fewer among those under 30 years old (45.6%) used POs in the past 30 days than those between the ages of 30 and 39 (58.2%), 40 and 49 (60.9%) or over age 50 (66.5%; $p < .01$). Since Whites and those under 30 years old (13.7%) constituted relatively small proportions of the sample, subsequent analyses were not analyzed in terms of racial or age group differences.

Table 1

Awareness, use, and diversion of prescription opioids among heroin-involved persons

Kind of prescription opioid	% Among those having		
	Heard of (N = 586)	Used (N = 501)	Sold (N = 232)
Methadone	98.6	71.9	64.7
OxyContin	92.2	38.3	41.4
Vicodin	94.5	37.5	30.2
Percocet	89.4	34.3	28.0
Codeine	98.1	33.3	18.5
Methadose	59.0	23.4	15.1
Oxycodone	54.4	14.0	12.1
Morphine	95.1	7.8	2.2
Demerol	93.3	5.4	1.7
Percodan	65.5	4.6	3.0
Dolophine	72.0	4.4	1.3
Pallodone	20.1	3.4	3.4
Dilaudid	67.6	2.2	2.2
Darvon	66.4	1.0	1.3
Fentanyl	16.4	1.0	0.9
Subutex	3.8	0.2	0.0
Suboxone	3.9	0.2	0.0

3.2. Awareness, use and diversion of POs

Table 1 lists three columns of percentages: those having heard of 15 kinds of POs for the whole sample, the percentages of those who have used each of the 15 POs among the 501 in the sample who have used any PO, and the percentages of those who have sold each of the POs among the 232 who self-reported any selling of POs. There were four POs with high percentages of having been heard of, used, and sold. Methadone was used (71.9%) and sold (64.7%) at a higher level than the next three POs in Table 1, OxyContin, Vicodin, and Percocet, which were used by between 34% and 38% of the users and sold by between 28% and 41% of the sellers. The POs containing buprenorphine, Subutex and Suboxone, were used by only one person and known to fewer than 4%.

3.3. Use of illegal drugs and methadone maintenance related to PO use

Table 2 presents chi-square analyses contrasting the recency and modes of use of various substances with the recency of PO use. More than two-thirds of the sample had used each of the illegal drugs or methadone maintenance. Past year use of crack (37.7%) and powder cocaine (35.4%) was higher than past year injection (22.5%) or snorting (21.7%) of heroin. The use of each drug increases among those who have used POs more recently ($p < .001$). The recent use of POs is especially associated with the past year use of methadone maintenance ($p < .001$). Recent use of POs is also associated with past year injection and snorting of heroin, as well as with past year use of crack or powder cocaine ($p < .001$).

3.4. Injection and snorting/sniffing of POs

Injection of POs occurred rarely. Summing the number of those injecting POs across all POs in Table 1, only 4.4% of

Table 2

Prescription opioid use contrasted with use of other drugs

	Recency of prescription opioid use (% , N)					
	Never	Lifetime	Past year	Past month	Past week	Total
Recency of use	10.1 (58)	12.8 (74)	17.5 (101)	34.1 (197)	25.5 (147)	100(577)
Injected heroin ^{***}						
Never	76.6 (45)	25.7 (19)	26.7 (27)	19.3 (38)	32.0 (47)	30.5 (176)
Lifetime	10.3 (6)	56.8 (42)	57.4 (58)	47.7 (94)	48.3 (71)	47.0 (271)
Past year	12.1 (7)	17.6 (13)	15.8 (16)	33.0 (65)	19.7 (29)	22.5 (130)
Snorted heroin ^{***}						
Never	55.2 (32)	21.6 (16)	29.7 (30)	11.7 (23)	13.6 (20)	21.0 (121)
Lifetime	15.5 (9)	63.5 (47)	59.4 (60)	66.3 (130)	57.1 (84)	57.3 (330)
Past year	29.3 (17)	14.9 (11)	10.9 (11)	21.9 (43)	29.3 (43)	21.7 (125)
Methadone maintenance ^{***}						
Never	69.0 (40)	32.9 (24)	30.7 (31)	21.3 (42)	24.8 (36)	30.1 (173)
Lifetime	10.3 (6)	16.4 (12)	11.9 (12)	13.7 (27)	14.5 (21)	13.6 (78)
Past year	20.7 (12)	50.7 (37)	57.4 (58)	65.0 (128)	60.7 (88)	56.3 (323)
Crack cocaine ^{***}						
Never	65.5 (38)	24.3 (18)	27.7 (28)	19.9 (39)	19.7 (29)	26.4 (152)
Lifetime	10.3 (6)	43.2 (32)	39.6 (40)	38.3 (75)	36.7 (54)	35.9 (207)
Past year	24.1 (14)	32.4 (24)	32.7 (33)	41.8 (82)	43.5 (64)	37.7 (217)
Powder cocaine ^{***}						
Never	25.9 (15)	6.8 (5)	6.9 (7)	5.6 (11)	6.8 (10)	8.3 (48)
Lifetime	34.5 (20)	63.5 (47)	57.4 (58)	60.9 (120)	54.1 (79)	56.3 (324)
past year	39.7 (23)	29.7 (22)	35.6 (36)	33.5 (66)	39.0 (57)	35.4 (204)

^{***} $p < .001$.

the PO-using sample injected any PO ($N=22$). Morphine was the most often injected PO (1.8%; $N=9$), followed by OxyContin (1.4%; $N=7$) and Dilaudid (.6%; $N=3$). At 15.4% of the PO-using sample ($N=77$), snorting/sniffing occurred more often than injection of POs. The most often snorted/sniffed POs were OxyContin (8.6%; $N=43$) and Vicodin (7.8%; $N=39$), with Morphine a distant third (1.8%; $N=9$). Since 37.1% ($N=189$) of the PO-using sample used POs for euphoria, most of the POs ingested for euphoria were not injected or snorted/sniffed. More than two-thirds (67.7%; $N=128$) of those using POs for euphoria used them as medically directed (22.8% had snorted/sniffed without injecting, 6.3% injected without snorting/sniffing, and 3.2% had both snorted/sniffed and injected). Those who claimed they did not use POs for euphoric purposes were almost all (92.6%) using POs without sniffing/snorting or injecting (6.6% had snorted/sniffed without injecting, 0.5% injected without snorting/sniffing, and 0.3% had both snorted/sniffed and injected).

3.5. Sales of illegal drugs related to sales of various POs

Table 3 indicates that nearly two-fifths (39.3%) of the sample sold at least one PO at least once in their lifetimes. Sales of heroin, powder cocaine, or crack were assessed such that those in the “never” column claimed to have never sold any of these drugs (41% of the total). Approximately a quarter (25.3%) of the sample who never sold heroin and/or cocaine sold a PO in their lives, while nearly half (49%) of those selling heroin/cocaine had sold POs. For each of the other POs, those selling heroin/cocaine were over twice as likely

to sell POs than those never selling heroin/cocaine ($p < .001$). For instance, although a quarter (25.1%) of the sample was lifetime methadone sellers, nearly one-third (32.3%) of the heroin/cocaine sellers had sold methadone compared with 14.8% of those never selling heroin/cocaine. However, small

Table 3

Prescription opioid sales contrasted with sales of other drugs

	Sales of heroin, powder cocaine or crack (% , N)		
	Never	Lifetime	Total
Prescription opioid sales	41.0 (237)	59.0 (341)	100(578)
Any prescription opioid ^{***}			
Never	74.7 (177)	51.0 (174)	60.7 (351)
Lifetime	25.3 (60)	49.0 (167)	39.3 (227)
Methadone ^{***}			
Never	85.2 (202)	67.7 (231)	74.9 (433)
Lifetime	14.8 (35)	32.3 (110)	25.1 (145)
OxyContin ^{***}			
Never	90.7 (215)	79.2 (270)	83.9 (485)
Lifetime	9.3 (22)	20.8 (71)	16.1 (93)
Vicodin ^{**}			
Never	93.2 (221)	85.3 (291)	88.6 (512)
Lifetime	6.8 (16)	14.7 (50)	11.4 (66)
Percocet ^{***}			
Never	94.5 (224)	85.0 (290)	88.9 (514)
Lifetime	5.5 (13)	15.0 (51)	11.1 (64)

^{***} $p < .001$.^{**} $p < .002$.

Table 4

Sources of OxyContin, Methadone and Vicodin contrasted with purposes for use

Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a dealer***	For Euphoria			From a dealer***	For Euphoria		
	Yes	No	Total		Yes	No	Total
Yes	62.5 (50)	23.3 (24)	40.4 (74)	Yes	74.5 (41)	14.9 (44)	24.2 (85)
No	37.5 (30)	76.7 (79)	59.6 (109)	No	25.5 (14)	85.1 (252)	75.8 (266)
Total	100 (80)	100 (103)	100 (183)	Total	100 (55)	100 (296)	100 (351)
Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a Dr. or pharmacy***	For Euphoria			From a program***	For withdrawal		
	Yes	No	Total		Yes	No	Total
Yes	38.3 (31)	77.6 (76)	59.8 (107)	Yes	14.3 (8)	82.0 (218)	70.2 (226)
No	61.7 (50)	22.4 (22)	40.2 (72)	No	85.7 (48)	18.0 (48)	29.8 (96)
Total	100 (81)	100 (98)	100 (179)	Total	100 (56)	100 (266)	100 (322)
Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a dealer**	For pain			From a dealer***	For withdrawal		
	Yes	No	Total		Yes	No	Total
Yes	33.0 (37)	56.1 (37)	41.6 (74)	Yes	51.4 (55)	12.7 (30)	24.8 (85)
No	67.0 (75)	43.9 (29)	58.4 (104)	No	48.6 (52)	87.3 (206)	75.2 (258)
Total	100 (112)	100 (66)	100 (178)	Total	100 (107)	100 (236)	100 (343)
Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a Dr. or Pharmacy***	For pain			Vicodin from dealer***	For Euphoria		
	Yes	No	Total		Yes	No	Total
Yes	83.0 (93)	21.2 (14)	60.1 (107)	Yes	64.1 (41)	7.9 (9)	28.1 (50)
No	17.0 (19)	78.8 (52)	39.9 (71)	No	35.9 (23)	92.1 (105)	71.9 (128)
Total	100 (112)	100 (66)	100 (178)	Total	100 (64)	100 (114)	100 (178)
Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a dealer***	For Withdrawal			From a dealer***	For pain		
	Yes	No	Total		Yes	No	Total
Yes	70.0 (28)	32.4 (46)	40.7 (74)	Yes	22.9 (27)	51.1 (23)	30.7 (50)
No	30.0 (12)	67.6 (96)	59.3 (108)	No	77.1 (91)	48.9 (22)	69.3 (113)
Total	100 (40)	100 (142)	100 (182)	Total	100 (118)	100 (45)	100 (163)
Sources of OxyContin	Reasons for OxyContin use (% , N)			Sources of Methadone	Reasons for Methadone and Vicodin use (% , N)		
From a Dr. or pharmacy	For withdrawal			From a dealer***	For withdrawal		
	Yes	No	Total		Yes	No	Total
Yes	50.0 (20)	63.0 (87)	60.1 (107)	Yes	61.9 (13)	23.6 (37)	28.1 (50)
No	50.0 (20)	37.0 (51)	39.9 (71)	No	38.1 (8)	76.4 (120)	71.9 (128)
Total	100 (40)	100 (138)	100 (178)	Total	100 (21)	100 (157)	100 (178)

*** $p < .001$.** $p < .003$.

proportions of those sampled reported exclusively selling POs, without selling heroin/cocaine, and half (51%) of those selling heroin/cocaine did not sell POs. Among the heroin/cocaine sellers, substantial proportions reported selling OxyContin (29.8%), Vicodin (14.7%), and Percocet (15.0%).

3.6. Sources of POs related to reasons for use

Table 4 shows the proportions of those who respond affirmatively to using OxyContin (left column), Methadone, and Vicodin (right column) for various purposes contrasted with

their sources of POs. The purposes investigated were for euphoria, pain and withdrawal. Some individuals in the PO-using sample used POs for multiple purposes. The sources were asked independently for each reason, such that one could have obtained POs for various purposes from various sources. The sources examined were illegal drug dealers, doctors/pharmacies, and in the case of methadone, drug treatment programs. Only 2.8% ($N=14$) of the PO-using sample obtained methadone from a doctor/pharmacy, so contrasts with this source were not included. When used for euphoria, OxyContin was obtained from a dealer by 62.5% of the sample, but more than one-third of the sample obtained OxyContin from a doctor or pharmacy (38.3%). Another third (33%) of those using OxyContin for pain relief had obtained it from a dealer, while 83% obtained it from a doctor or pharmacy. Among those using OxyContin for withdrawal 70% had obtained it from a dealer and 50% had obtained it from a doctor/pharmacy.

Although methadone maintenance was highly associated with PO use (Table 2), when methadone was used for euphoria, nearly three-quarters (74.5%) obtained it from a dealer; only 14.3% of those sampled obtained it from a program. Half (51.4%) of the methadone obtained for withdrawal purposes was obtained from a dealer. Like OxyContin, Vicodin was obtained from a dealer by 64.1% of the PO-using sample seeking it for euphoric effects, but only by 22.9% for pain and 61.9% for withdrawal purposes, slightly lower proportions than those for OxyContin.

3.7. Categories of PO use, misuse and diversion

An examination of the ethnographic data has guided the formulation of five conceptual categories that classify the respondents' use of POs in various ways. The following five classifications are not always mutually exclusive, in that the same individual's use of a given PO may be classified in many different ways (e.g. use for pain, withdrawal, and euphoria), however, four groups have been constructed as mutually exclusive for quantitative analysis. Some of the five categories also contain further divisions; only some of these are analyzed and described. The large number of categories and sub-categories illustrates the complexity confronting PO research and the importance of asking subjects to describe all the drugs they use or sell including all their reasons for use. The quotations are drawn from ethnographers' field notes that were written soon after completing the interview.

3.7.1. Category 1: current non-use of POs. The persons in this category do not report PO use. At most, the person has heard of POs. In this study, 10.1% of 577 respondents reported no PO use in their lifetimes. Some of these individuals were polydrug users (of powder cocaine, crack, marijuana, and others), but others did not use other illicit drugs (although they were interviewed while socializing with other subjects who did use street drugs). Some of the 10% of non-PO users in the sample sold POs or other drugs.

3.7.2. Category 2: medical use without diversion. These respondents report using POs for legitimate medical reasons *only* (e.g., pain, withdrawal, anxiety), and report obtaining them from legitimate medical sources only (doctor/pharmacy or program), denying any misuse or diversion of POs. Subject #1114 uses POs for pain as indicated and does not medically misuse or sell any of her Vicodin or Methadose.

1114 is a ... female ... currently on Methadose and also takes Vicodin by prescription. She has Scoliosis and takes the Methadose for pain management as well as for withdrawal. She receives 40-mgs of Methadose daily and has been on for 2 years. She regularly takes Vicodin for moderate to severe pain she experiences. She takes both drugs as indicated.

3.7.3. Category 3: medical use with some diversion. This type of respondent uses POs as indicated for legitimate purposes, but sells/diverts some portion of the medication for illegal resale. A further subdivision may isolate those who not only often use POs appropriately for medical reasons and divert some of their POs, but also misuse POs (e.g. sometimes consume for euphoric effects).

Subject #1117 ... had a kidney transplant 5 months ago and is prescribed OxyContin for pain. She injects her kidney dialysis medications herself and takes OxyContin daily. She receives Medicaid, which pays for her prescriptions. She suffers with severe pain at times. When she gets 40-mg OxyContin she sells it for \$10 each. When she has the 80-mg OxyContin she takes them for pain and/or sells them for \$25 each. She sells package deals of 60, 40-milligram OxyContin for \$475. At retail she could earn \$600 selling them for \$10 each. Buyers ... purchase the package deals to adulterate heroin. She is not on a methadone program but uses crack, opiates, and marijuana.

3.7.4. Category 4: illicit ingestion. Persons in this category misuse POs to get high and can be subdivided into three main groups, those who use POs to get high and for legitimate medical purposes, those who only use POs to get high, and those who both use for euphoria and sell POs. Subject #1123 takes POs both to treat pain and to induce euphoria.

1123 ... uses Methadone, OxyContin, and Methadose. He gets the orange Methadone from his live-in mate, OxyContin from street dealers, and Methadose from his program. He uses his mate's Methadone to sell or to get high with and OxyContin to get high. He takes all meds as indicated. He is an IDU who shoots up about 8 times a month and uses his girlfriend's Methadone about 4 times a month. He drinks his program Methadose about 28 times a month. He is also HIV-positive and is being treated for it at a local hospital. He is on 130-mgs of Methadose for about 4 years and also injects heroin. He takes the OxyContin also for pain from a bullet wound. He tried to get OxyContin prescriptions from doctors at his HIV-clinic but was denied. He acquires it from street dealers.

Table 5
Frequency, source and purpose of prescription opioid use between four groups of users

	Groups of PO users (% , N)				
	Medical use with diversion, 26.3 (131)	Medical use w/o diversion, 35.9 (179)	Euphoric use with diversion, 18.2 (91)	Euphoric use w/o diversion, 19.6 (98)	Total, 100 (499)
Frequency					
Past 30 days use of POs*** (N = 497)					
Zero	32.3 (42)	47.8 (85)	14.3 (13)	26.5 (26)	33.4 (166)
1–5	17.7 (23)	16.3 (29)	16.5 (15)	22.4 (22)	17.9 (89)
6–10	16.9 (22)	9.6 (17)	20.9 (19)	19.4 (19)	15.5 (77)
11–15	11.5 (15)	7.9 (14)	15.4 (14)	10.2 (10)	10.7 (53)
16 more	21.5 (28)	18.5 (33)	33.0 (30)	21.4 (21)	22.5 (112)
Source					
Any POs from a dealer*** (N = 485)					
No	74.2 (95)	83.6 (148)	16.9 (14)	25.8 (25)	58.1 (282)
Yes	25.8 (33)	16.4 (29)	83.1 (69)	74.2 (72)	41.9 (203)
Any POs from a doctor*** (N = 473)					
No	24.0 (29)	48.8 (83)	27.4 (23)	65.3 (64)	42.1 (199)
Yes	76.0 (92)	51.2 (87)	72.6 (61)	34.7 (34)	57.9 (274)
Any POs from a family member*** (N = 498)					
No	69.5 (91)	80.3 (143)	39.6 (36)	44.9 (44)	63.1 (314)
Yes	30.5 (40)	19.7 (35)	60.4 (55)	55.1 (54)	36.9 (184)
Purpose					
Any PO use for withdrawal*** (N = 493)					
No	55.8 (72)	83.1 (147)	65.2 (58)	48.0 (47)	65.7 (324)
Yes	44.2 (57)	16.9 (30)	34.8 (31)	52.0 (51)	34.3 (169)
Any PO use for pain*** (N = 476)					
No	22.3 (27)	41.2 (70)	31.0 (27)	54.1 (53)	37.2 (177)
Yes	77.7 (94)	58.8 (100)	69.0 (60)	45.9 (45)	62.8 (299)

^{***} $p < .001$.

3.7.5. Category 5: diversion only. This category includes those selling POs without actually using these drugs. Most diverters of POs use the kinds of drugs they sell and/or use other illegal drugs, so persons who only divert and resell POs are rare (only 8 were identified in the sample of 586 persons). The sources of illegal acquisitions may provide an accurate description of this drug market (e.g., POs that have been purchased online, those that have been stolen, or those diverted by a pain management patient or other kinds of patients). Subject #1136 reports buying and reselling POs as an adulterant for heroin sales.

1136 . . . buys Vicodin packages of 30 pills for \$20 and resells them to another dealer for \$50, thereby making a \$30 profit. He talked about OxyContin packages and that 60, 40-mg OxyContin brings in \$450. The Oxy is used to adulterate heroin. It is finely ground up and put into the heroin. He claims heroin adulterated with Oxy can yield as much as \$4,000 in a package. As a middle-man seller he buys packages of pills for resale. He buys Elavil, Oxy, Percocet, and Vicodin packages.

3.8. Four mutually exclusive classes of PO users

Table 5 presents data concerning frequency, sources and purposes of PO use for four classes of PO users, those who use for

pain or withdrawal (medically) and also divert POs, those who use POs medically and do not divert any of their POs, those who use POs for euphoric purposes and also divert them, and those who use POs for euphoric purposes without diverting any of them. Almost half (47.5%) of those who used POs for medical purposes without diversion did not use POs at all in the past 30 days, while 33% of those using POs for euphoric purposes and diverting POs used POs for 16 or more days in the past 30 days ($p < .001$). Euphoria-seekers who did not also divert their POs used at a level (21.4%) similar to those using for medical purposes (21.5% of medical users with diversion; 18.5% of those without diversion).

Most of those buying POs from a dealer belonged to groups defined by euphoric purposes for PO use (83.1% with diversion; 74.2% without diversion; $p < .001$). Only 16.4% of those using POs medically without diverting them obtained them from a dealer. Diverters, whether found among medical users (76%) or among euphoric users (72.6%) were the most likely to obtain POs from a doctor/pharmacy ($p < .001$). Many among those obtaining POs from family members are also seeking POs for euphoric purposes (60.4% of those who also divert; 55.1% of those who do not divert; $p < .001$).

Those using POs to ease or eliminate withdrawal were found mostly among two distinct groups: those using POs for euphoric purposes without diversion (52.0%) and those using POs medically but who also divert them (44.2%; $p < .001$). PO use for

pain was higher among those who diverted POs, among both medical users (77.7%) and euphoric users (69.0%).

4. Discussion

4.1. *The most common POs and their association to the use of street drugs*

Methadone, OxyContin, Vicodin, and Percocet were the POs most used and sold by this street drug-using sample (Table 1). POs containing buprenorphine, Subutex and Suboxone, were the most unknown and least used by the sample. Not unexpectedly in a street drug-using sample (Rosenblum et al., 2007), the use of the POs most used and sold was also highly associated with use of methadone maintenance, with injected and snorted heroin, as well as crack and powder cocaine (Table 2). Even those classified as medical users of POs (those using POs only for pain or withdrawal relief purposes, and using them as medically directed, as in Table 5) sought euphoria from drugs other than POs. The distinction between medical contrasted with euphoric use of POs does not extend to the use of any other drug for euphoric purposes by those in the sample. Although more PO users who snort/sniff and/or inject POs are found among those using for euphoric purposes rather than those using for medical purposes (see Section 3.4), more than two-thirds of those using POs for euphoric purposes did not snort/sniff or inject their POs.

Most of the field notes describe persons like subject #1123 (see Section 3.7.4) who use a variety of drugs for many different purposes, as pain-killers, to get high, to balance the side-effects of other drugs, and/or for withdrawal. Many could be categorized as Physically Ill Chemical Abusers or PICAs who use POs to get high, to supplement or augment illegal opiates and cocaine, as well as deal with physical pain resultant from injury and/or disease. In the total column of Table 5, 62.8% of the PO-using sample used POs for pain, 37.9% used POs for euphoria, and 34.5 used POs for withdrawal. Although much of the use of POs is for the treatment of pain by this street drug-using sample and most subjects ingested POs as medically indicated, subjects often used their POs for multiple purposes.

4.2. *Sales*

Approximately two-fifths (39.6%) of the sample reported lifetime experience with selling POs. Methadone was sold by 25.1%. OxyContin 16.1% and Vicodin and Percocet by slightly over 11% (Table 3). Even though approximately 75% of those selling POs also had a history of selling heroin and/or cocaine, a minority of the PO sellers (approximately 25%) did not report sales of heroin or cocaine. Half of all heroin and cocaine sellers are not selling POs (Table 3). Subject #1117 (see Section 3.7.3) is a typical seller of POs, using a variety of substances obtained from a variety of sources for a variety of purposes, including sales of POs when income is needed. In this sample the diverter of POs who does not use them (e.g. subject #1136, described in Section 3.7.5) is rare, yet deserves a special analytic category as someone more likely to deal in larger quantities. The field note suggests that some as-yet-to-be-estimated portion

of “street heroin” bags contain varying proportions of POs (or may contain only POs instead of heroin). PO-additive heroin may be more common than the occasional rash of deaths due to PO-laced heroin (e.g. May 28, 2006 *New York Times*) may suggest.

4.3. *The relationship between sources and PO use*

Usually the sample sought POs from specific sources depending upon their purpose of use. The large majority (83%) of those seeking OxyContin for pain relief had obtained it from a doctor or pharmacy and 62.5% of those seeking OxyContin for euphoria had obtained it from a dealer (Table 4). However, substantial portions (38.3%) of those seeking OxyContin for euphoria obtained it from doctors and pharmacies (Table 4). Apparently, they were able to circumvent the surveillance system that monitors opiates prescribed for pain relief. Note that the proportion of those using POs not only for euphoria, but also to divert POs, had a much higher proportion (72.6%) obtaining POs from doctors/pharmacies than euphoric users who did not divert POs (34.7%; Table 5). However, the proportion of those who diverted a portion of their POs obtained only for medical purposes was higher still (76%; Table 5), suggesting that a focus on the purpose of use may have little to do with the motivations for PO diversion. In short, patients of doctors seeking pain relief through POs were just as likely to divert them as those seeking euphoria through POs. PO use for pain was higher among those who diverted POs, among both medical users (77.7%) and euphoric users (69.0%; Table 5). Street dealers and family members were much more likely sources for those seeking euphoria than those using POs for medical purposes (Table 5), similar to results found by Rosenblum et al. (2007).

A third of those seeking OxyContin for pain relief obtained it from a dealer (33%; Table 4). Given the surveillance involved, many physicians may deny POs to known or suspected street drug users (Michna et al., 2004). These street drug users may have no other access to POs other than the illegal market. Table 5 indicates that those using POs for pain were at much higher proportions in categories of diversion across the euphoric/medical classifications (77.7% for the medical use with diversion group; 69% for the euphoric use with diversion group; $p < .001$). Thus, it appears that at the same time that some street drug users may be obtaining POs for pain relief, they are also reselling POs to others. This suggests that further research may investigate whether there are PO user groups, primarily using POs for pain relief, that often sell POs to each other. The existence of such groups would be congruent with the large proportion of PO sellers who are also PO users (all but 8 PO sellers also used) in this sample.

As with OxyContin, most of those who wanted methadone for euphoria acquired it from a dealer (74.5%) and only a few acquired it from a program (14.3%; Table 4). This indicates that program controls on methadone in NYC are strict enough to prevent most illicit users from obtaining it from a program, but overall controls on methadone are not sufficient to prevent some individuals from obtaining it from dealers. Half of those seeking methadone for withdrawal obtained it from a dealer (51.4%;

Table 4). This suggests that at least some street drug users, seeking an immediate avoidance of withdrawal, cannot afford the time it takes to obtain it from a program. Among those obtaining OxyContin for withdrawal, 70% obtained it from a dealer, while 50% obtained it from a doctor/pharmacy. Use of POs for withdrawal appears to be greatest in two very different groups, those who use POs medically and also sell POs, and those who use POs for euphoria but do not sell POs (Table 5).

4.4. Classification of PO users into four groups: empirical and policy implications

Table 5 classification of PO users into four groups, defined by whether they used POs medically or to get high and by whether they sold POs, successfully discriminated frequency, source, and even other purposes of PO use among the sample. Only one of the four groups (medical use without diversion) is comprised of persons largely behaving legally with POs, although some purchase POs from dealers (16.4%; Table 5), but this group uses POs far less frequently in the past 30 days than those who are either selling, or using POs for euphoria, or both (Table 5). The four-group classification clearly indicates that PO use for pain and withdrawal occurs across PO users, including those who use POs for euphoria. Thus, while most of the PO users in the sample are behaving illegally as users of POs for euphoria, and/or sellers of POs in illegal markets, their use of POs is usually for pain or withdrawal purposes and their ingestion is as medically directed.

The discrepancy within this sample, between largely illegal status and largely legitimate use of POs for pain and withdrawal, usually without snorting/sniffing or injecting, is evidence indicative of the cultural struggle outlined earlier between the medical culture and street drug user subculture. Street drug users can obtain POs for pain and/or withdrawal therapy from doctors/pharmacies (57.9%), but also obtain them from dealers (41.9%). Less often they obtain POs for euphoria, usually from dealers, but also from doctors and pharmacies (Tables 4 and 5). It is likely that the high rates of obtaining POs from dealers occur because those in the sample were accustomed to purchasing illegal drugs on the street and because access to POs for legitimate uses is restricted in urban areas populated largely by minorities (Green et al., 2005; Morrison et al., 2000).

The primary policy question suggested by the data is whether PO use among street drug users should be viewed from a Harm Reduction perspective, because most PO use is for non-euphoric purposes and as medically directed, rather than from a criminal justice perspective. An increased criminal justice perspective (e.g. strengthening DEA and other surveillance efforts) may have been justified if POs, like heroin and cocaine, were largely used for euphoria or sold in illegal markets, but most street drug users in this sample primarily used POs for pain and withdrawal relief. Criminal justice efforts should concentrate on those who illegally obtain and sell large quantities of POs and on those who use POs as a heroin additive or snort/sniff and inject POs. The euphoric use with diversion group identified among this sample are possibly those most likely to break laws, harm themselves and others, and should be the focus of criminal justice efforts.

The data demonstrate that more than three-quarters (77.7%, Table 5) of the medical-use-with-diversion group use POs to relieve pain and more than half (52%) of the euphoric-use-without-diversion group uses POs to ease withdrawal. These groups should not be the focus of law enforcement agencies but of doctors and social service organizations assisting street drug users in reducing the harm caused by their PO using and selling behaviors.

4.5. Limitations and future research

This study was limited by brevity of the survey instrument. No measures of pain, withdrawal or addiction severities were employed, which may have refined the interpretation of results. This study has demonstrated the need for further research among street drug users in order to clarify understanding of their PO use. Many questions remain concerning the evolving combinations of POs used with heroin and other illegal drugs. From some of the ethnographic data (not presented) the authors believe that the cost of POs may be less than the cost of heroin and other drugs to street dealers, but more research is needed to assess the dollar amounts dealers pay for each drug. In this study detailed data were not collected concerning the sample's purchase of POs and street drugs. The mixed reasons for PO use/misuse, sources of supply, and roles in PO resale and diversion have not been fully addressed. Analyses of PO use and sales with this street drug-using sample has indicated that POs were usually part of a larger pharmaceutical/illegal drug armamentarium for many subjects. Although reasons for PO use and sources of POs are important factors in understanding PO use, analyses were complicated by the fact that many subjects had multiple reasons for use and several different sources of POs. The PICA client (as defined above) may be more common among street drug users than previously suspected, and requires further investigation. A full-scale study, taking into account the many factors that may influence PO markets and PO use, could begin to model PO use, misuse, and diversion among this population. It may be replicated in future studies that much of the PO use among street drug users in NYC and elsewhere is consistent with medically approved purposes, even when it was not obtained legitimately (from a doctor or pharmacy), but further research is necessary to understand the benefits and harms of PO use among this population.

The data also suggest the importance of learning more about how street drug users tend to use heroin, methadone, and other POs to self-titrate their states of consciousness and how street drug sellers add POs to or sell POs separately from other drugs. Learning more about the potencies of opiates in street retail units is also very critical; for example, what are the morphine-equivalents of consuming two bags of street heroin plus a 40 mg OxyContin capsule, by either inhalation or injection? How do consumers rate such a combination in terms of euphoric state or extent that pain or withdrawal symptoms are relieved? POs appear to be an important addition to the drug-taking regimes of street drug users, but the extent of their medical and quasi-medical use, or misuse for euphoric reasons, and patterns of diversion, will need to be addressed in future research.

Acknowledgments

This research was supported by funding from the National Institute on Drug Abuse (NIDA–5R01 DA09339-05, 01 DA013690-05, 5 T32 DA07233-23; R01 DA009056-12), a sub-contract from CSR Associates from Reckitt Benckiser, and by National Development and Research Institutes. The authors acknowledge the many contributions to this research by Ellen Benoit, Eloise Dunlap, Andrew Rosenblum, Doris Randolph, Deborah Murray, and Beverly Jones-Squall.

References

- Community Epidemiology Working Group, 2005. Epidemiologic Trends in Drug Abuse: Advance Report. National Institute on Drug Abuse, Washington, DC.
- Compton, W.M., Volkow, N.D., 2006. Major increases in opioid analgesic abuse in the United States: concerns and strategies. *Drug Alcohol Depend.* 81, 103–107.
- Courtwright, D.T., 2001. *Dark Paradise: A History of Opiate Addiction in America*. Harvard University Press, Cambridge, MA.
- Courtwright, D.T., 2002. The road to H: The emergence of the American Heroin Complex, 1898–1956. In: Musto, D. (Ed.), *One Hundred Years of Heroin*. Auburn House, Westport, CT, pp. 4–19.
- Fountain, J., Strang, J., Gossop, M., Farrell, M., Griffiths, P., 2000. Diversion of prescribed drugs by drug users in treatment: analysis of the UK market and new data from London. *Addiction* 95 (3), 393–406.
- Gerhardt, A.M., 2004. Identifying the drug seeker: the advanced practice nurse's role in managing prescription drug abuse. *J. Am. Acad. Nurse Pract.* 16 (6), 239–243 (Review).
- Green, C.R., Ndao-Brumblay, S.K., West, B., Washington, T., 2005. Differences in prescription opioid analgesic availability: comparing minority and white pharmacies across Michigan. *J. Pain* 6, 689–699.
- Johnson, B.D., Golub, A., Dunlap, E., 2006. The rise and decline of drugs, drug markets, and violence in New York City. In: Blumstein, A., Wallman, J. (Eds.), *The Crime Drop in America*. Cambridge University Press, New York, pp. 164–206 (Revised Edition).
- Kraman, P., 2004. Prescription Drug Diversion. Trends Alert, Critical Information for State Decision-makers, The Council of State Governments, www.csg.org.
- Longo, L.P., Parran, T., Johnson, B., Kinsey, W., 2000. Addiction: Part II. Identification and management of the drug-seeking patient. *Am. Family Phys.* 61 (8), 2401–2408.
- Manchikanti, L., 2006. Prescription drug abuse: What is being done to address this new drug epidemic? Testimony before the subcommittee on criminal justice, drug policy and human resources. *Pain Phys.* 9, 287–321.
- McCabe, S.E., Teter, C.J., Boyd, C.J., Knight, J.R., Wechsler, H., 2005. Nonmedical use of prescription opioids among US college students: prevalence and correlates from a national survey. *Addict. Behav.* 30 (4), 789–805.
- Michna, E., Ross, E.L., Hynes, W.L., Nedeljkovic, S.S., Soumekh, S., Janfaza, D., Palombi, D., Jamison, R.N., 2004. Predicting aberrant drug behavior in patients treated for chronic pain: importance of abuse history. *J. Pain Symptom Manage.* 28 (3), 250–258.
- Morrison, R.S., Wallenstein, S., Natale, D.K., Senzel, R.S., Huang, L.L., 2000. We don't carry that—failure of pharmacies in predominantly nonwhite neighborhoods to stock opioid analgesics. *N. Engl. J. Med.* 342, 1023–1026.
- New York State Office of Alcoholism and Substance Abuse Services, 1999. State Demand and Needs Assessment: Estimation of Heroin Prevalence in New York State. Final Report to Center for Substance Abuse Treatment.
- New York Times, Sunday, May 28th, 2006. A deadly heroin mixture is claiming dozens of lives. p. 27.
- Partnership for a Drug-Free America, 2005. Generation Rx: National Study Reveals New Category of Substance Abuse Emerging: Teens Abusing Rx and OTC Medications Intentionally to Get High. http://www.drugfree.org/Portal/DrugIssue/Research/Generation_Rx_National_Study_Reveals_New_Category/Teens_Abusing_Rx_and_OTC_Medications.
- Passik, S.D., Kirsh, K.L., 2004. Opioid Therapy in Patients With a History of Substance Abuse. *CNS Drugs* 18 (1), 13–25.
- Rosenblum, A., Parrino, M., Schnoll, S.H., Fong, C., Maxwell, C., Cleland, C.M., Magura, S., Haddox, J.D., 2007. Prescription opioid abuse among enrollees into methadone maintenance treatment. *Drug Alcohol Depend.* 90, 64–71.
- Simoni-Wastila, L., Strickler, M.S., 2004. Risk factors associated with problem use of prescription drugs. *Am. J. Public Health* 94 (2), 266–268.
- Spunt, B., Hunt, D.E., Lipton, D.S., Goldsmith, D.S., 1986. Methadone diversion: a new look. *J. Drug Issues* 16, 569–583.
- Substance Abuse and Mental Health Services Administration, 2005. Overview of findings from the 2004 National Survey on Drug Use and Health (Office of Applied Studies, NSDUH Series H-27, DHHS Publication no. SMA 05-0461) Rockville, MD.
- Substance Abuse and Mental Health Services Administration, Office of Applied Studies, 2005. Substance use among older adults: 2002–2003 Update. US Department of Health and Human Services.
- Van Ness, P.H., Davis, W.R., Johnson, B.D., 2004. Socioeconomic marginality and health services utilization among Central Harlem substance users. *Subst. Use Misuse* 39 (1), 61–85.